

Table of Contents

EXECUTIVE SUMMARY	i
CHAPTER 1 INTRODUCTION	1
1.0 Introduction.....	1
1.1 Statement of Purpose and Need	1
1.2 Fisheries Management in the Western Pacific Region	2
1.2.1 The Magnuson-Stevens Fishery Conservation and Management Act and the Fishery Management Councils	2
1.2.2 NOAA's National Marine Fisheries Service	3
1.2.3 Roles and Responsibilities of the Federal Government, State, Territories, and Commonwealth in Fisheries Management in the Western Pacific Region.....	3
1.2.4.1 Coral Reef Ecosystems FMP	4
1.2.4.2 Bottomfish and Seamount Groundfish FMP.....	5
1.2.4.3 Precious Corals FMP	5
1.2.4.4 Crustaceans FMP	6
1.2.4.5 Pelagics FMP	7
1.3 The National Environmental Policy Act.....	10
1.3.1 Programmatic EIS	10
1.3.2 Public Participation.....	10
1.3.3 Notice of Intent and Public Scoping	11
1.4 Coordination With Other Agencies	12
1.5 Topics in Ecosystem Approaches to Fisheries Management.....	12
1.5.1 Ecosystem Boundaries	12
1.5.2 Precautionary Approach, Burden of Proof, and Adaptive Management	13
1.5.3 Ecological Effects of Fishing and Non-fishing Activities	14
1.5.4 Data and Information Needs	15
1.5.5 Use of Indicators and Models	15
1.5.6 Single-species Management vs. Multi-species Management	16
1.5.7 Ocean Zoning.....	17
1.5.8 Intra-agency and Inter-agency Cooperation.....	17
1.5.9 Community-based Management	18
1.6 An Incremental Approach.....	19
CHAPTER 2 ALTERNATIVES	21
2.0 Introduction.....	21
2.1 Issue 1: Fishery Ecosystem Plan Boundaries (Regulatory)	21
2.1.1 Issue 1: Alternatives Considered But Eliminated from Further Detailed Study.....	22
2.1.2 Issue 1 Alternatives Considered in Detail.....	23
2.1.2.1 Alternative 1A: No Action – do not delineate or implement FEP boundaries	23
2.1.2.3 Alternative 1C: Delineate and implement four separate demersal FEPs surrounding each archipelago as well as a single Pelagic FEP that includes the entire region (Preferred).....	24
2.1.2.4 Alternative 1D: Delineate and implement separate FEPs for each biogeographic and pelagic zone.....	24

2.2 Issue 2: Management Unit Species (Regulatory).....	25
2.2.1 Issue 2 Alternatives Considered But Eliminated from Further Detailed Study.....	25
2.2.2 Issue 2 Alternatives Considered in Detail.....	26
2.2.2.1 Alternative 2A: No Action – do not change the current MUS lists	26
2.2.2.2 Alternative 2B: Define FEP MUS as those current MUS that are believed to be present within each FEP boundary (Preferred).....	30
2.2.2.3 Alternative 2C: Define FEP MUS as those current MUS plus incidentally caught and associated species that are known to occur within each FEP boundary	44
2.2.2.4 Alternative 2D: Define FEP MUS as those current MUS plus incidentally caught and associated species that are believed to potentially occur within each FEP boundary	44
2.3 Issue 3: Council Advisory Structure (Non-regulatory).....	44
2.3.1 Issue 3 Alternatives Considered But Eliminated from Further Detailed Study.....	44
2.3.2 Issue 3 Alternatives Considered in Detail.....	45
2.3.2.1 Alternative 3A: No Action - do not change the current Council advisory structure	45
2.3.2.2 Alternative 3B: Add a single FEP Plan Team to the current advisory structure .	46
2.3.2.3 Alternative 3C: Replace the current FMP Advisory Panels, Plan Teams, and five Standing Committees with FEP Advisory Panels, FEP Plan Teams and FEP Standing Committees	47
2.3.2.4 Alternative 3D: Replace the current FMP Advisory Panels, Plan Teams, and five Standing Committees with FEP Advisory Panels, FEP Standing Committees and two FEP Plan Teams (preferred).....	47
2.4 Issue 4: Regional Coordination (Non-regulatory)	47
2.4.1 Issue 4 Alternatives Considered in Detail.....	48
2.4.1.1 Alternative 4A: No Action - do not establish Ocean Council type groups.....	48
2.4.1.2 Alternative 4B: Establish Regional Ecosystem Council Committees (preferred)	48
2.4.1.3 Alternative 4C: Participate in and support Ocean Council type groups	49
2.4.1.4 Alternative 4D: Establish independent Regional Ecosystem Councils	49
2.5 Issue 5: International Coordination (Non-regulatory)	49
2.5.1 Alternative 5A: No Action- continue to participate in international fisheries management fora and international workshops	50
2.5.2 Alternative 5B: Increase participation in international fisheries management fora and establish meetings/workshops with neighboring nations of island areas of the Western Pacific Region (Preferred)	50
2.5.3 Alternative 5C: Stop participating in international management fora	51
CHAPTER 3 AFFECTED ENVIRONMENT	52
3.1 Physical Environment	52
3.1.1 The Pacific Ocean	52
3.1.2 Geology and Topography	52
3.1.4 Ocean Layers	54
3.1.5 Ocean Depth Zones.....	55
3.1.6 Ocean Water Circulation.....	56
3.1.7 Surface Currents.....	56
3.1.8 Transition Zones	56
3.1.9 Eddies.....	57

3.1.10 Deep Ocean Currents	59
3.1.1.1 Prominent Pacific Ocean Meteorological Features.....	60
3.1.1.2 Pacific Island Geography.....	62
3.1.1.2.1 Micronesia.....	62
3.1.1.2.2 Melanesia	63
3.1.1.2.3 Polynesia	64
3.2 Biological Environment	66
3.2.1 Marine Food Chains, Trophic Levels and Food Webs	66
3.2.2 Benthic Environment	67
3.2.2.1 Intertidal Zone.....	67
3.2.2.2 Seagrass Beds.....	68
3.2.2.3 Mangrove Forests.....	68
3.2.2.4 Coral Reefs.....	68
3.2.2.5 Deep Reef Slopes.....	72
3.2.2.6 Banks and Seamounts	73
3.2.2.7 Deep Ocean Floor	73
3.2.2.8 Benthic Species of Economic Importance	74
3.2.3.8.1 Coral Reef Associated Species	74
3.2.3.8.2 Reef Slope, Bank, and Seamount Species	76
3.2.3 Pelagic Environment.....	78
3.2.3.1 Pelagic Species of Economic Importance.....	80
3.3 Essential Fish Habitat and Habitat Areas of Particular Concern	81
3.4 Protected Species	82
3.4.1 Sea Turtles	82
3.4.1.2 Loggerhead Sea Turtles	84
3.4.1.3 Green Sea Turtles.....	85
3.4.1.4 Hawksbill Sea Turtles	88
3.4.1.5 Olive Ridley Sea Turtles.....	89
3.4.2 Marine Mammals	90
3.4.2.3 Blue Whale.....	91
3.4.2.4 Fin Whale.....	91
3.4.2.5 Sei Whale	92
3.4.2.6 Hawaiian Monk Seal	92
3.4.2.7 Other Marine Mammals	92
3.4.3 Seabirds.....	93
3.4.3.1 Short-tailed Albatross	93
3.4.3.2 Newell's Shearwater	94
3.4.3.3 Other Seabirds.....	95
3.5 The Western Pacific Region	95
3.5.1 American Samoa	96
3.5.1.1 Marine Environment.....	97
3.5.1.2 Protected Species	101
3.5.1.3 Fisheries	104
3.5.1.3.1 Dermersal Fisheries	104
3.5.1.3.2 Pelagic Fisheries	106

3.5.1.4 Communities.....	109
3.5.2 Commonwealth of Northern Mariana Islands.....	113
3.5.2.1 Marine Environment.....	113
3.5.2.2 Protected Species	115
3.5.2.3 Fisheries	116
3.5.2.3.1 Demersal Fisheries.....	117
3.5.2.3.2 Pelagic Fisheries	121
3.5.2.4 Communities.....	122
3.5.3 Guam.....	124
3.5.3.1 Marine Environment.....	124
3.5.3.2 Protected Species	126
3.5.3.3 Fisheries	126
3.5.3.3.1 Demersal Fisheries.....	126
3.5.3.3.2 Pelagic Fisheries	129
3.5.3.4 Communities.....	130
3.5.4 Hawaii.....	133
3.5.4.1 Marine Environment.....	134
3.5.4.2 Protected Species	138
3.5.4.3 Fisheries	139
3.5.4.3.1 Demersal Fisheries.....	140
3.5.4.3.2 Pelagic Fisheries	148
3.5.4.4 Communities.....	149
3.5.5 Pacific Remote Island Areas.....	152
3.5.5.1 Baker Island	152
3.5.5.2 Howland Island	154
3.5.5.3 Jarvis Island	155
3.5.5.4 Palmyra Atoll	157
3.5.5.5 Kingman Reef.....	158
3.5.5.6 Johnston Atoll	159
3.5.5.7 Wake Island	161
3.5.5.8 PRIA Fisheries.....	162
CHAPTER 4 ENVIRONMENTAL CONSEQUENCES	169
4.1 Issue 1: Boundaries of fishery ecosystem plans (Regulatory)	170
4.1.1 Alternative 1A: No Action (status quo) – maintain existing FMPs, do not delineate or implement FEP boundaries	170
4.1.2 Alternative 1B: Delineate and implement separate FEPs surrounding each archipelago	171
4.1.3 Alternative 1C: Delineate and implement four separate demersal FEPs surrounding each archipelago as well as a single Pelagic FEP that includes the entire region (Preferred)	173
4.1.4 Alternative 1D: Delineate and implement separate FEPs for each biogeographic and pelagic zone	175
4.2 Issue 2: Species to be managed under fishery ecosystem plans (Regulatory)	176
4.2.1 Alternative 2A: No Action – do not change the current MUS lists	176

4.2.2 Alternative 2B: Define FEP MUS as those existing MUS which are believed to occur within each FEP boundary (Preferred)	177
4.2.3 Alternative 2C: Define FEP MUS as the existing MUS plus incidentally caught and associated species, which are known to occur within each FEP boundary	178
4.2.4 Alternative 2D: Define FEP MUS as the existing MUS plus incidentally caught and associated species, which are believed to potentially occur within each FEP boundary....	179
4.3 Issue 3: Council Advisory Process (Non-regulatory)	181
4.3.1 Alternative 3A: No Action – Do not change the current advisory structure	181
4.3.2 Alternative 3B: Add a single FEP Plan Team to the current advisory structure	182
4.3.3 Alternative 3C: Replace the current FMP Advisory Panels, Plan Teams, and five Standing Committees with FEP Advisory Panels, FEP Plan Teams and FEP Standing Committees	183
4.3.4 Alternative 3D: Replace the current FMP Advisory Panels, Plan Teams, and five Standing Committees with FEP Advisory Panels, FEP Standing Committees and two FEP Plan Teams (Preferred)	184
4.4 Issue 4: Regional Coordination (Non-regulatory)	186
4.4.1 Alternative 4A: No Action - do not establish Ocean Council type groups.....	186
4.4.2 Alternative 4B: Establish Regional Ecosystem Council Committees (Preferred)....	187
4.4.3 Alternative 4C: Participate in and support Ocean Council type groups	188
4.4.4 Alternative 4D: Establish independent Regional Ecosystem Councils	190
4.5 International Coordination (Non-regulatory).....	191
4.5.1 Alternative 5A- No action.....	191
4.5.2 Alternative 5B- Increase level of participation in international management fora and establish meetings/workshops with neighboring nations of Western Pacific Region island areas (Preferred).....	193
4.5.3 Alternative 5C- Do not participate in international management fora and establish meetings/workshops with neighboring nations of Western Pacific Region island areas....	194
4.6 Environmental Justice.....	195
4.7 Cumulative Effects.....	196
4.7.1 Issue 1: Boundaries of Fishery Ecosystem Plans.....	196
4.7.2 Issue 2: Species Managed Under Fishery Ecosystem Plans	199
4.7.3 Issue 3: Council Advisory Process	201
4.7.4 Issue 4: Regional Coordination.....	202
4.7.5 Issue 5: International Coordination.....	203
4.8 Reasons for choosing the preferred alternatives	205
CHAPTER 5 ENVIRONMENTAL MANAGEMENT ISSUES	218
5.1 Introduction.....	218
5.2 Short-term Uses vs. Long-term Productivity	218
5.3 Irreversible and Irrecoverable Commitment of Resources.....	218
5.4 Energy Requirements and Conservation Potential of the Alternatives.....	218
5.5 Urban Quality, Historic Resources and Design of the Built Environment, Including Resource and Conservation Potential of the Alternatives	219
5.6 Cultural Resources and Conservation Potential of the Alternatives.....	219
5.7 Possible Conflicts Between the Alternatives and Other Plans.....	219
5.8 Adverse Effects that Cannot be Avoided.....	219

CHAPTER 6 EIS PREPARERS AND PUBLIC REVIEW	220
6.1 Preparers of the EIS	220
6.2 Distribution of DPEIS.....	220
CHAPTER 7 REFERENCES	231

List of Figures

Figure 1: Earth's Tectonic Plates	53
Figure 2: Temperature and Salinity Profiles of the Ocean	55
Figure 3: Depth Profile of Ocean Zones (source: WPFMC 2005)	56
Figure 4: Major Surface Currents of the Pacific Ocean.....	58
Figure 5: North Pacific Transition Zone	58
Figure 6: Deep Ocean Water Movement	59
Figure 7: Central Pacific Pelagic Food Web.....	70
Figure 8: The Western Pacific Region.....	96
Figure 9: Bottomfish Landings and Value in American Samoa 1982-2003.....	106
Figure 10: Tuna and Non-Tuna PMUS Landings in American Samoa 1982-2003.....	107
Figure 11: Distribution of Pelagic Effort Between Trolling and Longlining in American Samoa	109
Figure 12: Bottomfish Landings in CNMI 1983-2003	120
Figure 13: Pelagic Landings in CNMI 1983-2004	122
Figure 14: Guam Bottomfish Landings	128
Figure 15: Estimated Annual Total Domestic Pelagics Catch in Guam 1982-2004.....	130
Figure 16: NWHI Lobster Fishery Landings 1983-1999	142
Figure 17: MHI and NWHI Bottomfish Landings 1986-2003	144
Figure 18: Hawaii Bottomfish Revenue (inflation adjusted) By Area 1970-2003	145
Figure 19: Average Prices for NWHI and MHI BMUS Landings 1970-2003	146

List of Tables

Table 1: Alternatives Considered in Detail.....	ii
Table 2: Amendments to the Pelagics FMP	8
Table 3: PEIS Public Scoping Meeting Schedule.....	11
Table 4: Western Pacific FMP Regulatory Areas.....	23
Table 5: Boundaries of Ecosystems and FEPs under Alternative 1C (Preferred)	24
Table 6: Current Bottomfish and Seamount Groundfish FMP MUS	26
Table 7: Current Crustaceans FMP MUS	27
Table 8: Current Precious Corals FMP MUS	27
Table 9: Current Pelagics FMP MUS	27
Table 10: Current Coral Reef Ecosystem FMP MUS.....	28
Table 11: Coral Reef Ecosystem FMP MUS (cont.)	29
Table 12: Alternative 2B American Samoa Archipelago FEP MUS (Preferred)	30
Table 13: Alternative 2B Marianas Archipelago FEP MUS (Preferred).....	34

Table 14: Alternative 2B Hawaii Archipelago FEP MUS (Preferred)	37
Table 15: Alternative 2B PRIA FEP MUS (Preferred)	40
Table 16: Alternative 2B Pacific Pelagics FEP MUS (Preferred)	43
Table 17: Current Council Advisory Panel Structure	46
Table 18: Essential Fish Habitat and Habitat Area of Particular Concern for Western Pacific MUS.....	81
Table 19: Non-ESA Listed Marine Mammals of the Western Pacific Region.....	92
Table 20: Seabirds Known to be Present Around American Samoa	103
Table 21: Volume and Value of Black Coral Landings in Hawaii 1990-1997	147
Table 22: Hawaii Commercial Pelagic Catch, Revenue, and Average Price 2002-2003	149
Table 23: Statistical Summary of Hawaii's Economy, 1995-1999, 2002	151
Table 24: Alternatives Considered in Detail.....	169
Table 25: Summary of Impacts.....	206

List of Acronyms and Abbreviations

ASG	American Samoa Government
°C	Degrees Celsius
BMUS	Bottomfish Management Unit Species
BiOp	Biological Opinion
CFR	Code of Federal Regulations
CITES	Council on International Trade and Endangered Species
cm	Centimeters
CNMI	Commonwealth of the Northern Mariana Islands
CPUE	Catch Per Unit Effort
CRE	Coral Reef Ecosystem
CZMA	Coastal Zone Management Act
DAWR	Division of Aquatic and Wildlife Resources, Government of Guam
DBEDT	Department of Business, Economic Development and Tourism, State of Hawaii
DFW	Division of Fish and Wildlife, CNMI
DLNR	Department of Land and Natural Resources, Hawaii
DMWR	Department of Marine and Wildlife Resources, American Samoa Government
DOC	Department of Commerce
DOD	United States Department of Defense
DOI	Department of the Interior
DPEIS	Draft Programmatic Environmental Impact Statement
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
ENSO	El Niño Southern Oscillation
EO	Executive Order
EPAP	Ecosystem Principals Advisory Panel
ESA	Endangered Species Act
FAO	Food and Agriculture Organization
FEP	Fishery Ecosystem Plan
FDM	Farallon de Medinilla, CNMI
FFS	French Frigate Shoals
fm	Fathoms
FMP	Fishery Management Plan

FR	Federal Register
FRFA	Final Regulatory Flexibility Analysis
ft	Feet
FWCA	Fish and Wildlife Coordination Act
HAPC	Habitat Areas of Particular Concern
HDAR	Division of Aquatic Resources, State of Hawaii
HINWR	Hawaiian Islands National Wildlife Refuge
HMSRT	Hawaiian Monk Seal Recovery Team
ITZC	Inter Tropical Convergence Zone
kg	Kilograms
km	Kilometers
lb	Pounds
LOF	List of Fisheries
m	meters
mt	metric ton
MBTA	Migratory Bird Treaty Act
MHI	Main Hawaiian Islands
min SST	minimum spawning stock threshold
mm	millimeters
MMPA	Marine Mammal Protection Act
MPA	Marine Protected Area
MSFCMA	Magnuson-Stevens Fisheries Conservation and Management Act
MSST	Minimum Stock Size Threshold
MSY	Maximum Sustainable Yield
MUS	Management Unit Species
NDSA	Naval Defense Sea Areas
NEPA	National Environmental Policy Act
nm	Nautical Miles
NMFS	National Marine Fisheries Service
NMFS-PIFSC	NMFS, Pacific Islands Fisheries Science Center
NOAA	National Oceanic and Atmospheric Administration
NPTZ	North Pacific Transition Zone
NWHI	Northwestern Hawaiian Islands
NWR	National Wildlife Refuge
NWRSAA	National Wildlife Refuge System Administration Act
OY	Optimum Yield
PIRO	Pacific Islands Regional Office (NMFS)
PRIA	Pacific Remote Island Area
PT	Plan Team (for FMP development)
SATZ	Subarctic Transition Zone
SFA	Sustainable Fisheries Act
SPR	Spawning Potential Ratio
STFZ	Subtropical Frontal Zone
SSC	Scientific and Statistical Committee
USCG	United States Coast Guard
USFWS	United States Fish and Wildlife Service
VMS	Vessel Monitoring System
WpacFIN	Western Pacific Fisheries Information Network
WPRFMC	Western Pacific Regional Fishery Management Council